

CLEANING TOOL WITH REMOVABLE CLEANING COVERS

REFERENCE TO RELATED APPLICATIONS

This application is a continuation-in-part of U.S. patent application Serial No. 10/637,938, filed August 9, 2003, which is a continuation-in-part of U.S. patent application Serial No. 09/993,137, filed November 16, 2001, which is a continuation-in-part
5 of U.S. patent application Serial No. 09/979,415, now abandoned, which is a U.S. national phase of PCT/US99/12945, filed June 11, 1999. U.S. patent application Serial No. 09/993,137, is also a continuation-in-part of U.S. patent application Serial No. 09/602,189, filed June 12, 2000, now U.S. Patent No. 6,405,403, which is a continuation-in-part of U.S. patent application Serial No. 09/094,551, filed June 12, 1998,
10 now U.S. Patent No. 6,298,517. U.S. application No. 10/637,938 also claims priority from U.S. provisional patent application Serial No. 60/436,031, filed December 23, 2002. The present application also claims priority to U.S. provisional patent application Serial No. 60/456,380 filed March 21, 2003.

U.S. patent application Serial No. 09/993,137, in turn, claims priority from U.S.
15 provisional patent application Serial No. 60/311,463, filed August 11, 2001, and U.S. provisional patent application Serial No. 60/260,969, filed January 10, 2001. Each of the above-referenced applications is incorporated herein in their entirety by reference.

FIELD OF THE INVENTION

This invention relates generally to cleaning tools with removable and disposable
20 cleaning covers.

BACKGROUND

Typically, persons who wish to clean areas such as baseboards and around faucets or toilets or other small areas use a dusting or wiping cloth or a sponge manipulated using their fingers or hands. This is often uncomfortable or ineffective. In light of this, there is a need

for cleaning tools designed to simplify cleaning baseboards and small areas. When a towel, rag, or sponge is used for cleaning, it is typically washed and reused. Alternatively, disposable cleaning devices, such as paper towels or pre-moistened cleaning sheets may be used. However, such disposable items are not designed for use with any type of cleaning
5 implement.

There have recently become available disposable, pretreated cleaning sheets for washing dishes. These sheets are pretreated with a soap or detergent for cleaning the dishes. In use, the sheet is wetted and then used to clean the dishes. However, this requires the user to contact the sheet with his or her hands. In light of this, there is a need for a cleaning tool
10 to support such a cleaning sheet.

SUMMARY OF THE INVENTION

The present invention provides a variety of embodiments of cleaning systems, including a cleaning tool and disposable cleaning covers or sheet for use therewith. According to one embodiment, the cleaning system includes a cleaning head with a generally
15 spherical outer contour. The head is formed of a deformable and resilient foam-like material. A handle extends from the cleaning head. A plurality of disposable cleaning covers is provided, with each cover having an inward face and an opposed outer face. Each cover has an installed position wherein the inward face is disposed against the outer contour of the cleaning head and the cover is wrapped about the cleaning head. The system further includes
20 a retaining device for selectively retaining one of the covers in the installed position, such that the cleanable surface may be cleaned with the outer face of the cover. One cover is disposed in the installed position and the cleanable surface is cleaned until the outer face becomes soiled. The cover is then removed from the installed position and another of the covers is disposed in the installed position.

25 BRIEF DESCRIPTION OF THE DRAWINGS

FIGURE 1 is a perspective view of a first embodiment of a cleaning tool that forms a portion of the present invention;

FIGURE 2 is a perspective view of a portion of the cleaning tool according to a second embodiment of the present invention;

FIGURE 3 is a perspective view of a cleaning head portion of a cleaning tool according to another embodiment of the present invention;

5 FIGURE 4 is a perspective view of a first embodiment of a disposable cleaning cover for use with the present invention;

FIGURE 5 is a perspective view of a second embodiment of a disposable cleaning cover for use with the present invention;

10 FIGURE 6 is a perspective view of a third embodiment of a cleaning cover for use with the present invention;

FIGURE 7 is a perspective view of a portion of a cleaning tool with a disposable cleaning cover disposed thereon;

FIGURE 8 is a perspective view of another embodiment of a cleaning tool with an alternative embodiment of a cleaning cover disposed thereon;

15 FIGURE 9 is a cross-sectional side view of the disposable cleaning cover of Figure 4, taken along lines 9-9;

FIGURE 10 is a perspective view of a portion of another alternative embodiment of a cleaning tool according to the present invention;

20 FIGURE 11 is a perspective view of a portion of a cleaning tool according to another alternative, with a disposable cleaning sheet disposed thereon;

FIGURE 12 is a perspective view of a portion of yet another alternative embodiment of a cleaning tool for use with the present invention;

FIGURE 13 is a perspective view of a portion of a cleaning tool with an alternative embodiment of a cleaning cover installed thereon;

25 FIGURE 14 is a perspective view of yet another alternative cleaning cover for use with the present invention;

FIGURE 15 is a perspective view of a cleaning tool according to the present invention with an alternative retainer for retaining a cleaning cover thereon;

FIGURE 16A is a perspective view of one embodiment of a cleaning tool , along with a container for storing disposable cleaning covers;

FIGURE 16B is a top view of the container of Figure 16A;

FIGURE 17 is a perspective view of a container, along with an alternative cleaning tool with a flattened cleaning head;

FIGURE 18 is a perspective view of an alternative embodiment of a container for holding disposable cleaning covers, along with a cleaning tool;

FIGURE 19 is a perspective view of a disposable dishwashing sheet and a cleaning tool designed for use with such a sheet;

FIGURE 20 is a perspective view of the cleaning tool of Figure 19 with the cleaning sheet disposed thereon;

FIGURE 21 is an exploded perspective view of another embodiment of a cleaning tool for use with a disposable dishwashing sheet.

FIGURE 22 is a perspective view of a resilient cleaning head and an associated holder and handle for use therewith, according to the present invention;

FIGURE 23 is a perspective view of a portion of a cleaning tool with a disposable cleaning cover disposed thereon;

FIGURE 24 is a perspective view of a resilient cleaning head and a holder and handle for use therewith;

FIGURE 25 is a detailed view of a portion of a handle and holder for a cleaning head;

FIGURE 26 is a perspective view of an assembled cleaning tool according to an embodiment of the present invention;

FIGURE 27 is a front view of an embodiment of a cleaning head for use with the present invention;

FIGURE 28 is a front view of an alternative cleaning head for use with the present invention;

FIGURE 29 is a front view of another alternative cleaning head for use with the present invention;

FIGURE 30 is a perspective view of a portion of a cleaning tool with yet another alternative cleaning head; and

FIGURE 31 is a perspective view of yet another alternative embodiment of a disposable cleaning cover for use with various embodiments of the present invention.

5 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention provides cleaning tools for cleaning a variety of areas. According to a first aspect, a cleaning tool is provided for cleaning baseboards, corners, kick areas under cabinets, and similar areas. Figure 1 illustrates a cleaning tool 10 for this purpose. The cleaning tool 10 preferably includes a generally spherical foam head 12 with a
10 connection member 14 extending therefrom. The connection member 14 may be interconnected with the head 12 in any of a variety of ways, as will be clear to those of skill in the art. In the illustrated embodiment, the connection member 14 is attached to the head 12 using barbs 15 that engage the inside of the foam sphere 12. A handle 16 is attached to the connection member 14 such as by threading, as shown. As shown, the connector 14 may
15 have a pivotal joint 18 to allow the head 12 to be positioned at various angles to the handle 16. The joint may be constructed in other manners, as will be clear to those of skill in the art.

The head 12 preferably is formed of a very soft, low-density open cell foam, such that the head 12 is easily deformable for cleaning duties. Preferably, the sphere 12 has a
20 textured outer surface, such as is characteristic for a very soft open cell foam product. As will be clear to those of skill in the art, the cleaning head 12 may be constructed of a variety of materials that provide deformability and resiliency. It is preferred that the head be formed from a foam-like material, such as polyurethane foam, as well as various natural and synthetic sponge materials. It is preferred that the foam-like material has a low density.
25 Foam may also be measured as having an Indentation Force Deflection (IFD) as a measurement of its firmness. This is a measure taken at 25% deflection. It is preferred that foam for use in the present invention have an IFD in the range of 15 to 65 pounds, with 35 to 45 pounds being preferred.

Figure 2 shows an alternative embodiment of a cleaning tool 20, including a generally spherical soft foam head 22, a connection member 24, and a handle 26. In this embodiment, the connection device 24 includes at least one gripper 28, for gripping an edge of a cleaning cover positioned over the head 22. The gripper 28 may take a variety of forms, with several versions disclosed and discussed in Applicant's prior applications, incorporated herein. In the gripper 28 illustrated in Figure 2 takes a form of a star-shaped cut in a piece of flexible material. The edge of a piece of cleaning material may be tucked into the cut so that it is retained by the gripper.

Figure 3 illustrates another alternative embodiment of a cleaning head 30 with a connection number 32. In this embodiment, portions of hook and loop material 34 are disposed on the outer surface of the head 30 for gripping or retaining a cleaning cover. As will be clear to those of skill in the art, hook and loop-type material typically consists of a portion of "hook material" and a portion of "loop material" that interconnect with one another. The portion of hook and loop material disposed on the outer surface of the head 30 is preferably the "hook material" since it is configured to grip cloth-like materials. However, for purposes of the present invention, this material would be referred to generically as a portion of hook and loop-type material.

The embodiments of cleaning tools and cleaning heads illustrated in Figures 1 – 3 may be altered in various ways without departing from the scope of the present invention. As shown the connection number may take varied forms. Also, the retainers or retaining devices may take forms such as the gripper 28, the hook and loop-type material 34, adhesives of various types, as well as any other retention means, including clamps and clips known to those of skill in the art. A hinge or flex joint, such as 18 in Figure 1, may be used with any of the embodiments. The handle may be connected with a connection member, as illustrated, or may be directly connected to the cleaning head. Also, the handle may interconnect with the connection number in any of a variety of ways. It is preferred that a connection member be provided such that interchangeable handles may be connected thereto. It is also preferred that the connection member and handle have a diameter substantially smaller than the diameter of the generally spherical cleaning head, so as to allow the cleaning

head to reach under and around obstacles. It is also preferred that the connection number, such as 14 in Figure 1, have a rubberized or soft cover or surface such that scratching of objects is avoided.

The tools of Figures 1 - 3 may each be used as shown, in which case the foam head 12, 22 or 30 is brought into contact with the surface to be cleaned, such as a baseboard. By pressing moderately against the baseboard, the head will deform so as to clean the entire baseboard and the corner where the baseboard meets the floor. Preferably, the handles 16 and 26 are sufficiently long that a person using the cleaning tools does not need to stoop over. Alternatively, a shorter handle may be provided. As will be clear to those of skill in the art, the same tool is useful for cleaning under the edges of cabinets, where a kick space is provided, and is useful for cleaning where walls meet ceilings and other hard to reach areas. The heads may then be rinsed and reused, and may be treated with a variety of cleaning supplies to aid in cleaning.

While the tools may be used as shown, according to the present invention it is preferred that a disposable cover is provided and used for actual cleaning. In this way, the cover may be used and disposed of once it is soiled. A new cover may then be placed on the cleaning head so that additional cleaning may be done without having to clean the head of the tool. Figures 4-6 illustrate various embodiments of a cleaning cover or mitt for use on the tools of Figures 1-3. Figure 4 illustrates a cleaning mitt or cover 40. The cover 40 may be formed of a pair of sheets, forming a front and a back of a mitt, with an opening 41 therebetween. Welded seams 42 interconnect the front 44 and back 46 sheets. As shown, the interconnection does not extend entirely to the top, thereby providing a large enough opening that the cleaning heads may be squeezed and placed inside of the cover. In one preferred embodiment, the heads of the cleaning tools have an outer diameter of 6 to 10 inches, with approximately 8 inches being one preferred size. However, larger and smaller sizes may also be provided. As shown, the cover 40 has front and back sheets 44 and 46 that each has an upwardly extended tab 48 and 50. These tabs may be gripped by a gripper such as 28 in Figure 2. Alternatively, they may be used just to pull the cover onto the cleaning head.

Referring now to Figure 5, an additional cover or mitt 48, is illustrated. In this embodiment, both the front 54 and back 56 sheet are generally U-shaped, as shown. They are interconnected at seam 58. Again, a cleaning head is positioned in between the front and back sheets forming the cover 52 so that the cover covers the head. Experimentation has shown that the covers grip the heads reasonably well without the use of adhesive or auxiliary attachments. This is due to the roughened surface of the foam spheres. In addition, the covers 40 or 52 are preferably formed of a spun-lace non-woven material such as used in Swiffer® or Grab-it® cleaning sheets. Any of the materials discussed in Applicant's co-pending and issued patents may be used for the formation of these covers 30 and 40. This includes forming the covers from sheets of cleaning material that are single-layer, multiple-layer, with or without reinforcement scrim, texturized, and/or untreated or pretreated with a variety of materials.

Figure 6 shows an alternative embodiment, similar to cover 52, wherein upper tabs 62 are provided on the cover 60. These tabs assist in the installation or removal of the cover 50 onto the cleaning heads.

Figure 7 illustrates one of the cleaning tools with a cover installed thereon and the upper edges of the cover retained by the grippers. Figure 8 shows another of the cleaning tools with a different embodiment of a cover 70 disposed thereon. This cover 70 is formed like a shower cap with an elastic material forming a band 72 at the opening, so as to retain the cover 70 around the cleaning head. As shown, the cover 70 may loosely fit about the cleaning head, which may be beneficial for some cleaning tasks. Alternatively, the cover may conform more tightly to the outer surface of the cleaning head.

Referring now to Figure 9, a cross-sectional side view of the cover 40 of Figure 4 is shown. As shown, the cover is formed by a front 44 and back 46 sheet that are joined at the seam 42. The sheets are preferably a non-woven spun-bonded material suitable for dusting and cleaning. The cover forms and surrounds a cavity 43 between the sheets 44 and 46 for receiving a cleaning head. The cleaning head is inserted through the opening 41 into the cavity 43. As will be clear to those of skill in the art, the covers may be constructed in a variety of other ways, including being formed as a somewhat spherical sheet or cover, rather

than a front and a back sheet. Alternatively, it may be formed of three or more sheets. Figure 14 shows an alternative cover 70 with outer surfaces 72 that are tufted, flocked, or frayed to provide additional cleaning abilities. As will be clear to those of skill in the art, the outer surfaces of the covers may be configured in a variety of ways, and may have a variety of textures or treatments. Figure 31 shows yet another alternative cover 74 for use with any of the embodiments of cleaning tools disclosed herein. This cover 74 includes a front sheet 75 and a back sheet 76, each with a plurality of cleaning fingers or fibers extending therefrom. This cover is formed as with a variety of disposable and non-disposable dusters and cleaners known to those of skill in the art. Preferably, the fingers and/or fibers are formed and/or treated so as to collect and retain dirt and dust.

Figures 10-12 show alternative embodiments of cleaning heads for a cleaning tool designed to clean baseboards and kick spaces under cabinets. In each embodiment, the heads are preferably formed of the resilient and deformable foam-like material and are radially symmetrical. The head 80 of the cleaning tool in Figure 10 has a larger base portion 82, a smaller upper portion 84, and a recessed transition portion 86. The shape allows reaching under cabinets and other objects to dust or clean. The head 90 in Figure 11 is generally cylindrical and is shown with grippers 92 in several places. The grippers may be provided on any of the embodiments of cleaning heads disclosed herein and in any position. A flat cleaning sheet 94 is shown wrapped about the head 90 with its edges 96 tucked into the grippers 92. A generally flat cleaning sheet may be wrapped around any of the cleaning heads shown herein, or a shaped cover may be used. The cleaning head 100 in Figure 12 has a shape similar to the cleaning head 80, though the transition portion is shaped differently. It is also shown having portions of hook and loop-type material 102 for retaining the cleaning sheet. Again, portions of hook and loop-type material may be provided on any of the embodiments of cleaning heads herein and in any position, as necessary or useful for retaining a cleaning sheet or cleaning cover thereon. Figure 13 illustrates that each of the heads of Figures 10-12 may be covered with a bag-shaped dusting cover 104, which fits over the heads. It may be pleated and may have elastic 106 at the top.

Turning now to Figure 15, a cleaning tool 110 is illustrated, which is designed for use

with disposable cleaning wipes 114, such as those made by Clorox®. These disposable cleaning wipes may be wrapped around the head 112 of the tool 110, with the head preferably being a soft foam ball. Preferably, the handle 116 has multiple notches 118 for attaching the edge of the wipe, though other attachment means may be provided, such as clips, grippers, hook and loop-type fastener material, or other retainers. In this embodiment, the handle 116 is attached to the head 112 using a barbed end 120. Hook and loop fastener or other attachment means 100 may be provided on the side of the handle for attaching it to a canister holding disposable wipes.

Referring now to Figures 16-18, it is preferred that a cleaning tool according to one embodiment of the present invention be designed so as to attach to or be sold in conjunction with a container of cleaning wipes or covers. Figure 16A shows a cylindrical canister 130 with a handheld cleaning tool 132 being attached thereto. The wipes or covers may be pre-moistened and/or pretreated with a cleaning material. As such, it is preferred that the container 130 be resealable to retain liquid therein. The present invention may also be used with cleaning wipes provided in a peel-and-seal-type container, as known to those of skill in the art. Figure 16B shows a top view with a handle of the tool being attached in an indent in the side of the canister 130. Figure 18 shows a more rectangular canister with the cleaning tool being attached to its side.

The above-discussed embodiments of the present invention may be altered in various ways. As one example, the heads of the various cleaning tools may be treated with an antibacterial substance to avoid the spread of germs. Additionally, the wipes or cover may be shaped other than shown. As one example, the covers may be sized significantly larger than the heads which they are designed to cover, so that they fit somewhat loosely. They then tend to cling to the cleaning head. Likewise, with the cleaning tools for the disposable wipes, the wipes may be flat sheets that wrap about the head of the cleaning tools, or may be shaped covers.

Figure 17 shows an alternative cleaning tool 134 with a flattened spatula-like cleaning head 135 for receiving a cleaning sheet or cleaning cover. The head 135 is preferably formed from a cleanable material such as a semi-rigid plastic or rubber. This

material allows the head 135 to be sanitized, and it does not substantially absorb and retain liquid between uses. As will be clear to those of skill in the art, the head 135 may have other sizes and shapes. For example, it may be more square or rectangle than shown, it may be ovalized, or it may have a thickness other than shown. As one example, the head 135 may be thicker on one side than on the other so as to provide a thinner edge for cleaning in a crevice.

Referring now to Figure 19, an embodiment of the present invention for use in cleaning dishes is illustrated. This embodiment includes a cleaning tool 140 with a cleaning head 142 and a handle 144. As known to those of skill in the art, various manufacturers offer pretreated cleaning sheets designed for washing dishes. Such a sheet is shown at 146. Such a sheet 146 is typically pretreated with a detergent for washing dishes. The detergent becomes active when wetted. The cleaning head 142 is preferably provided with portions or strips of hook and loop-type fastener material 148. While the head 142 may have a variety of shapes, a generally cylindrical shape, as shown, is preferred. The sheet 146 is wrapped about the head 142, as shown in Figure 20. Preferably, a clamping bar 150 is provided for further retaining the sheet 146 in place. The clamping bar 150 has a first end 152 pivotably attached to the head 142, and a second end 154 that is detachably retained by the head 142. The clamping bar 150 rests in a groove or slot in the head 142 when it is in the clamped position, as shown in Figure 20. The sheet 146 may be positioned on the head 142 such that it extends beyond the lower end 156 of the head and the second end 154 of the clamping bar 150 pierces or penetrates the sheet to hold it in place.

Figure 21 illustrates an alternative embodiment of a cleaning tool for retaining a disposable dishwashing cloth. The tool 160 has a handle 162 and a detachable head 164 that is preferably formed of a resilient and deformable foam-like material. The head 164 may have grippers and/or portions of hook and loop-type material thereon. A cleaning sheet 166 may be wrapped about the head 164 and held in place by a clamping bar 168, that functions in the same way as in the previous embodiment.

Figure 22 shows an exploded view of a portion of a cleaning tool according another embodiment of the present invention. In this embodiment, a cleaning head 170 is formed as

a generally spherical foam-like ball. A holder 172 has a circular opening 174 that is smaller than the outer diameter of the head 170. A handle 176 is attached to the holder 172 and includes grippers 178, in this embodiment. In use, the head 170 is compressed and inserted into the opening 174 and the holder 172 and allowed to re-expand. This causes the head 170 to take on a somewhat peanut-shaped profile. Figure 23 shows the assembled cleaning tool with a cleaning sheet 180 wrapped about the cleaning head 170 and retained by the grippers 178. For purposes of the present invention, the spherical head 170 is considered to remain generally spherical after insertion in the holder 172. That is, the somewhat peanut-shaped design after insertion is still considered to be generally spherical.

Figure 24 illustrates an alternative embodiment of a cleaning tool. In this embodiment, a portion of a handle 182 is shown connected to a holder 184. The holder 184 takes a form of a strap with inter-connectable ends to grip the center of the peanut-shaped cleaning head 186. As will be clear to those of skill in the art, the holder 184 may take a variety of forms, including the ring of Figure 22, as well as a variety of straps that inter-connect or overlap in various ways. For example, the strap may be shaped to surround the head and biased to this position, but may be flexed to surround the head 186. Also, the holder 184 may be used with other versions of cleaning heads, rather than the peanut-shaped head 186. The peanut-shaped cleaning head may also be used with other versions of handles and holders.

Figure 25 shows a detailed view of a cleaning tool handle 189 with a ring-like holder 190. Figure 26 shows such a handle and holder with a cleaning head 192 formed by a plurality of foam-like fingers 194. This assembly of foam-like fingers 194 provides a textured assembly that may be used as is, or covered with a cleaning sheet or cover according to any of the embodiments described herein. The head 192 may be formed by bundling multiple fingers 194 or, preferably, may be formed by a sheet of foam material with a plurality of cuts in the side. This sheet is rolled or folded to provide the head 192. The embodiment of Figure 26 may take a variety of forms, depending on the size, shape and arrangement of the fingers 194. For example, they may form a generally spherical head or head that is generally cylindrical or elongated.

Figures 27 – 30 illustrate four embodiments of generally spherical foam-like cleaning heads that may be used with any of the handles, holders and/or sheets or covers described herein. The head 200 in Figure 27 has a single cut therein. A cleaning sheet or cover may be wrapped about the head 200 and tucked into the cut 202. The same procedure may be performed with the head 192 in Figure 26. A sheet or cover may be wrapped around it and held in place by the fingers 194, or the sheet or cover may be tucked in between the fingers to hold it in place. Figure 28 shows a head 204 with two cuts 206 and 208. Figure 29 shows a head 210 with multiple cuts 212. These heads, 204 and 210 may be used in the same way. Figure 30 shows an alternative wherein a head 214 has one or more holes 216 defined therein. Portions of the cleaning sheet or cover may be tucked into the holes 216 to assist in retaining the cover or sheet on the head 214. In the embodiment of Figure 30, a pair of holes is shown and a “smile” is printed on the head to give it a novelty appearance. As will be clear to those of skill in the art, the generally spherical heads of Figures 27 – 30 may have other shapes such as oblong, peanut-shaped, somewhat squared off, or other shapes.

As will be clear to those of skill in the art, the various embodiments of the present invention discussed herein may be altered in various ways without departing from the scope or teaching of the present invention. It is the following claims, including all equivalents that define the scope of the present invention.